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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/500,014

**Applicant(s)**

FUNABIKI ET AL.

**Examiner**

LEON ANDREWS

**Art Unit**

2416

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

**DETAILED ACTION**

***RCE***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 9, 2009 has been entered.

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

2. Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

**Claims 28-30** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 28-30 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to particular machine, or (2) transform underlying subject matter (such as an article or material) to a different state or thing. See page 10 in *Re to Bilski* 88 USPQ 2d 1385. The instant claims are neither positively tied to a particular

machine that accomplishes function of the claimed method steps nor transform underlying subject matter, and therefore do not qualify as a statutory process. The method including steps of measuring, requesting, deleting and registering is broad enough that the claims cannot be completely performed manually without a machine nor is any transformation apparent.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-30** are being rejected under 35 U.S.C. 103 (a) by Gwon (Pub. No.: US 2003/0016655 A1) in view of Warrier et al. (Patent No.: US 6,707,809 B1) and Leung (Patent No.: US 6,195,705 B1).

**Regarding Claim 1**, Gwon discloses a mobile node (Fig. 1, mobile node 135) comprising:

a measuring section (Mobile IP version 6 route optimization, paragraph [0055], page 6, lines 2-3) for measuring at least one of a hop number (network topology requires at most five

hops during packet routing, paragraph [0055], page 6, lines 4-5) and communication delay time (codec, packet formation, propagation and unknown access delays due to high variable wireless link conditions, paragraph [0055], page 6, lines 6-9) to a home agent (Fig. 1, Home Agent (HA) 145), wherein the home agent registers a care-of address that the mobile node is utilizing for communication (new “care of” IP address is registered with the home area (HA) by the mobile node 135, paragraph [0050], page 5, lines 10-12), and the home agent forwards messages directed to a home address of the mobile node to the care-of address (packets (messages) transmitted to the home IP address of the mobile node 135 will be tunneled by the home area (HA) to the mobile node 135 at its new “care-of” IP address, paragraph [0050], page 6, lines 20-23);

a home agent information acquiring section (Fig. 1, gateway router (GR) 130, maintains current location information for the mobile node, paragraph [0039], page 4, lines 3-5) for acquiring information about a home agent (Fig. 1, 145) as a subject of measurement (route packets to the mobile node, paragraph [0039], page 4, lines 5-6) of the measuring section; and

a home agent selecting section (Fig. 5, L3MP mobility prediction, 710) for changing, when a measurement value (value selected to indicate when a hand-off is prior to the actual hand-off, paragraph [0060], page 7, lines 2-7) to the home agent to which the mobile node belongs becomes equal to or greater than a first predetermined value (threshold value, paragraph [0060], page 7, line 2), from the belonging home agent to a new home agent, the belonging home agent and the new home agent being associated to a same home network of the mobile node, by using the information which acquired in the acquiring section, having a measurement value (time-out value set to enable the mobile node to complete the hand-off process to the new local

agent before communications with the old agent are lost, paragraph [0084], page 9, lines 12-15) equal to or less than a second predetermined value (time-out value can be set based on information provided by the mobility prediction process 710, paragraph [0084], page 9, lines 16-17), wherein the new home agent after the change forwards messages directed to the home address of the mobile node to the care-address (packets (messages) transmitted to the home IP address of the mobile node 135 will be tunneled by the home area (HA) to the mobile node 135 at its new "care-of" IP address, paragraph [0050], page 6, lines 20-23).

Gwon fails to disclose the selecting from the belonging home agent to a new home agent.

But, Warriar et al. discloses in Fig. 2, home agent control mode performs home agent functions with plurality of home agents 18, 18A and 18B whereby home agent 18 (new home agent) performs tunneling for the mobile node and forwards packets of data from the WAP server of home agent, home radius 38 assigned to home network 14 to the foreign agent 16 for transmission to the mobile node 10, columns 5 and 6, lines 58-67 and lines 1-3 respectively.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Warriar et al.'s selecting from the belonging home agent to a new home agent because this would have allowed the home agent 18 (new home agent) to forward packets of data to the mobile node 10, columns 5 and 6, lines 66-67 and lines 1-3 respectively.

The combination of Gwon and Warriar et al. fails to disclose the belonging home agent and the new home agent being associated to a same home network of the mobile node.

But, Leung discloses in Fig. 2A, the belonging home agent (HA1) and the new home agent (HA2, HA3) being associated to a same home network (home network 12) of the mobile node (Mobile Nodes 6, 27).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Leung's belonging home agent and the new home agent being associated to a same home network of the mobile node because this would have allowed the original active Home Agent to relinquish its active status and revert to the new Home Agent, column 17, lines 58-60.

**Regarding Claim 2**, Gwon discloses a mobile node according to claim 1, wherein, in a case that the mobile node is in real-time communication with another node, the measuring section measures a communication delay time to the home agent to change (packet latency is reduced by pre-establishing a new route before hand-off occurs to provide fast, real-time, dynamic route establishment between a mobile node and another fixed or mobile correspondent node when hand-off occurs, paragraph [0027], page 3, lines 1-6) , when a communication delay to the

belonging home agent becomes equal to or greater than a third predetermined value (predictive analyses used to get an advanced determination when the network communications with the mobile node will be handed off from one neighboring node to another, paragraph [0027], page 3, lines 6-10), the belonging home agent by one having a communication delay equal to or smaller than a fourth predetermined value (delays due to pre-established and new routes are greatly reduced, paragraph [0027], page 3, lines 12-17);

and in the case of not so, the measuring section measures a hop number (Fig. 4, 720) to the home agent to change, when a hop number (Fig. 4, 720) to the belonging home agent becomes equal to or greater than a first predetermined value (threshold value, paragraph [0060], page 7, line 2), the belonging home agent by one having a hop number (Fig. 4, 720) equal to or smaller than a second predetermined value (time-out value can be set based on information provided by the mobility prediction process 710, paragraph [0084], page 9, lines 16-17).

**Regarding Claim 3**, Gwon discloses a mobile node according to claim 1, wherein the measuring section determines the hop number by computing a difference ((IP version 6 requires at most five hops during packet routing, paragraph [0055], page 6, lines 2-5) - (Fig. 4, hops from mobile node 135 to correspondent node FA is 2 ( 2 times 720)) between an initial value of a hop limit field in a header of a packet of IP version 6 (IP version 6 requires at most five hops during packet routing, paragraph [0055], page 6, lines 2-5) sent from the home agent and a value of the hop limit field (Fig. 4, hops from mobile node 135 to correspondent node FA is 2 ( 2 times 720) received.



**Regarding Claim 4**, Gwon discloses a mobile node according to claim 2, wherein the measuring section determines the hop number by computing a difference between an initial value of a hop limit field in a header of a packet of IP version 6 sent from the home agent and a value of the hop limit field received ((IP version 6 requires at most five hops during packet routing, paragraph [0055], page 6, lines 2-5) - (Fig. 4, hops from mobile node 135 to correspondent node FA is 2 ( 2 times 720)).

**Regarding Claim 5**, Gwon discloses a mobile node according to claim 1, wherein the measuring section determines the communication delay time by measuring a time of from sending the home agent an ICMP echo request packet to receiving an ICMP echo reply packet from the home agent (mobile node 135 sends an ICMP a discovery request to the home router to determine any changes before beginning the pre-registration process, paragraph [0078], page 8, lines 5-10).

**Regarding Claim 6**, Gwon discloses a mobile node according to claim 2, wherein the measuring section determines the communication delay time by measuring a time of from sending the home agent an ICMP echo request packet to receiving an ICMP echo reply packet from the home agent (mobile node 135 sends an ICMP a discovery request to the home router to determine any changes before beginning the pre-registration process, paragraph [0078], page 8, lines 5-10).

**Regarding Claim 7**, Gwon discloses a mobile node according to claim 1, wherein the measuring section increases a measuring frequency of communication delay time when the moving speed of the mobile node is high, and decreases the measuring frequency when the moving speed is low

(velocity and direction of movement of the various mobile nodes predict the duration of time neighboring nodes can remain in communication, paragraph [0021], page 3, lines 5-7).

**Regarding Claim 8**, Gwon discloses a mobile node according to claim 3, wherein the measuring section sends an ICMP echo request packet when the number of times of connection changes to the access router (mobile node 135 sends ICMP HA request to its home router to determine if the home router IP address configuration has changed before beginning the pre-registration process 720 as specified in the mobile IP version 6 document, paragraph [0078], page 8, lines 5-10) becomes an integer (cast address, paragraph [0078], page 8, line 7) times a fifth predetermined value (pre-registration 720, paragraph [0078], page 8, lines 9-10).

**Regarding Claim 9**, Gwon discloses a home agent (Fig. 1, Home Agent (HA) 145) comprising: a home agent information notifying section (Fig. 4, home agent 145 notifies the correspondent node 140 to update its binding information for the mobile node, paragraph [0079], page 8, lines 6-8) for answering a registration refusal (home agent does not grant the registration request, paragraph [0077], page 8, lines 10-11) to a mobile node (Fig. 1, mobile node 135) and notifying the mobile node of a changed-to home agent in a case that, when receiving a registration request (home agent/foreign agent 145 communicates the registration request, paragraph [0077], page 8, lines 3-4) from the mobile node (Fig. 1, mobile node 135), the home agent is deficient in unoccupied resource (deficiencies of the current Internet addressing and routing protocols and schemes to accommodate network access and data communication by wireless mobile node, paragraph [0018], page 2, lines 2-4), the home agent and the changed-to home agent being

associated to a same home network of the mobile node, wherein the change-to home agent registers a care-of address that the mobile node is utilizing for communication (new “care of” IP address is registered with the home area (HA) by the mobile node 135, paragraph [0050], page 5, lines 10-12), and after the change the changed-to home agent forwards messages directed to a home address of the mobile node to the care-of address (packets (messages) transmitted to the home IP address of the mobile node 135 will be tunneled by the home area (HA) to the mobile node 135 at its new “care-of” IP address, paragraph [0050], page 6, lines 20-23).

Gwon fails to disclose a change-to home agent.

But, Warriar et al. discloses in Fig. 2, home agent control mode performs home agent functions with plurality of home agents 18, 18A and 18B whereby home agent 18 (change-to home agent) performs tunneling for the mobile node and forwards packets of data from the WAP server of home agent, home radius 38 assigned to home network 14 to the foreign agent 16 for transmission to the mobile node 10, columns 5 and 6, lines 58-67 and lines 1-3 respectively.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Warrier et al.'s a change-to home agent because this would have allowed the home agent 18 (change-to home agent) to forward packets of data to the mobile node 10, columns 5 and 6, lines 66-67 and lines 1-3 respectively

The combination of Gwon and Warrier et al. fails to disclose the home agent and the changed-to home agent being associated to a same home network of the mobile node.

But, Leung discloses in Fig. 2A, the home agent (HA1) and the changed-to home agent (HA2, HA3) being associated to a same home network (home network 12) of the mobile node (Mobile Nodes 6, 27).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Leung's home agent and the changed-to home agent being associated to a same home network of the mobile node because this would have allowed the original active Home Agent to relinquish its active status and revert to the new Home Agent, column 17, lines 58-60.

**Regarding Claim 10**, Gwon discloses a home agent according to claim 9, further comprising:

a home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21) for storing home agent information including an address and current resource information of another home agent (home agents/local agents 145 store IP addresses of intermediary nodes used for further

communications between the mobile node 135 and the corresponding node 140, paragraph [0080], page 9, lines 19-25),

wherein the home agent information notifying section answers the registration refusal and selects a home agent (Fig. 1, Home Agent (HA) 145) suited for a predetermined condition (IP address of direct route resulting from the exchange of greeting packets in its route history cache, paragraph [0080], page 9, lines 20-23) from the home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21) to thereby answer home agent information of the selected home agent (Fig. 1, Home Agent (HA) 145, paragraph [0038], page 4, line 9).

**Regarding Claim 11**, Gwon discloses a home agent according to claim 10, wherein the predetermined condition is at least any of a maximum in unoccupied resource (current Internet addressing and routing protocols and schemes to accommodate network access and data communication by wireless mobile node, paragraph [0018], page 2, lines 2-4) and a minimum in load (data communication when the destination node is experiencing loads due to other factors, paragraph [0009], page 1, lines 14-17).

**Regarding Claim 12**, Gwon discloses a home agent (Fig. 1, Home Agent (HA) 145) comprising: a home agent information notifying section (Fig. 4, home agent 145 notifies the correspondent node 140 to update its binding information for the mobile node, paragraph [0079], page 8, lines 6-8) for answering a registration refusal (home agent does not grant the registration request, paragraph [0077], page 8, lines 10-11) to a mobile node (Fig. 1, mobile node 135) and

notifying the mobile node of a changed-to home agent (home area (HA) having registered the new “care of” IP address sends the mobile node 135 a binding update message establishing its new location (changed to home agent) in the network, paragraph [0050], page 5, lines 11-20) in a case that, when received a registration request (home agent/foreign agent 145 communicates the registration request, paragraph [0077], page 8, lines 3-4) from the mobile node (Fig. 1, mobile node 135), the mobile node entered a predetermined sub-network (Fig. 1, mobile node may change location such that it moves from one BTS sub-network 155 to another, paragraph [0042], page 4, lines 11-13), the home agent and the changed-to home agent being associated to a same home network of the mobile node, wherein the changed-to home agent registers a care-of address that the mobile node is utilizing for communication (new “care of” IP address is registered with the home area (HA) by the mobile node 135, paragraph [0050], page 5, lines 10-12), and after the change the changed-to home agent forwards messages directed to a home address of the mobile node to the care-of address (packets (messages) transmitted to the home IP address of the mobile node 135 will be tunneled by the home area (HA) to the mobile node 135 at its new “care-of” IP address, paragraph [0050], page 6, lines 20-23).

Gwon fails to disclose a change-to home agent.

But, Warriar et al. discloses in Fig. 2, home agent control mode performs home agent functions with plurality of home agents 18, 18A and 18B whereby home agent 18 (change-to home agent) performs tunneling for the mobile node and forwards packets of data from the WAP server of home agent, home radius 38 assigned to home network 14 to the foreign agent 16 for transmission to the mobile node 10, columns 5 and 6, lines 58-67 and lines 1-3 respectively.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Warriar et al.'s a change-to home agent because this would have allowed the home agent 18 (change-to home agent) to forward packets of data to the mobile node 10, columns 5 and 6, lines 66-67 and lines 1-3 respectively.

The combination of Gwon and Warriar et al. fails to disclose the home agent and the changed-to home agent being associated to a same home network of the mobile node.

But, Leung discloses in Fig. 2A, the home agent (HA1) and the changed-to home agent (HA2, HA3) being associated to a same home network (home network 12) of the mobile node (Mobile Nodes 6, 27).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Leung's home agent and the changed-to home agent being associated to a same home network of the mobile node because this would have allowed the original active Home Agent to relinquish its active status and revert to the new Home Agent, column 17, lines 58-60.

**Regarding Claim 13**, Gwon discloses a home agent according to claim 12, further comprising a home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21) for storing home agent information including an address of another home agent (home agents/local agents 145 store IP addresses of intermediary nodes used for further communications between the mobile node 135 and the corresponding node 140, paragraph [0080], page 9, lines 19-25), wherein the home agent

information notifying section answers the registration refusal and selects a home agent (Fig. 1, Home Agent (HA) 145) having as a control range the sub-network (Fig. 1, 155) to thereby answer home agent information of the selected home agent.

**Regarding Claim 14**, Gwon discloses a home agent according to claim 11, wherein the registration refusal and the home agent information are an addition of a home agent information (home agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21) option to a binding acknowledgement message (mobile node 135 is sent a binding acknowledgement message, paragraph [0050], page 5, lines 17-18).

**Regarding Claim 15**, Gwon discloses a home agent (Fig. 4, Home Agent (HA) 145) comprising: a home agent information notifying section (Fig. 4, home agent 145 notifies the correspondent node 140 to update its binding information for the mobile node, paragraph [0079], page 8, lines 6-8) for notifying, when receiving a notification for changing a home agent (Fig. 4, Home Agent (HA) 145) and an address of a changed-to home agent (new care-of IP address to its home IP address, paragraph [0079], page 8, lines 4-5) from a belonging mobile node (Fig. 4, mobile node 135), the changed-to home agent of an entry content concerning the mobile node of a binding cache (Fig. 4, home agent 145 to update its binding cache to bind mobile node's new care-of IP address to its home IP address, paragraph [0079], page 8, lines 3-5), the home agent and the changed-to home agent being associated to a same home network of the mobile node, wherein the changed-to home agent registers a care-of address that the mobile node is utilizing for communication (new "care of" IP address is registered with the home area (HA) by the



mobile node 135, paragraph [0050], page 5, lines 10-12), and after the change the changed-to home agent forwards messages directed to a home address of the mobile node to the care-of address (packets (messages) transmitted to the home IP address of the mobile node 135 will be tunneled by the home area (HA) to the mobile node 135 at its new “care-of” IP address, paragraph [0050], page 6, lines 20-23).

Gwon fails to disclose a change-to home agent.

But, Warrier et al. discloses in Fig. 2, home agent control mode performs home agent functions with plurality of home agents 18, 18A and 18B whereby home agent 18 (change-to home agent) performs tunneling for the mobile node and forwards packets of data from the WAP server of home agent, home radius 38 assigned to home network 14 to the foreign agent 16 for transmission to the mobile node 10, columns 5 and 6, lines 58-67 and lines 1-3 respectively.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Warriar et al.'s a change-to home agent because this would have allowed the home agent 18 (change-to home agent) to forward packets of data to the mobile node 10, columns 5 and 6, lines 66-67 and lines 1-3 respectively.

The combination of Gwon and Warriar et al. fails to disclose the home agent and the changed-to home agent being associated to a same home network of the mobile node.

But, Leung discloses in Fig. 2A, the home agent (HA1) and the changed-to home agent (HA2, HA3) being associated to a same home network (home network 12) of the mobile node (Mobile Nodes 6, 27).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Leung's home agent and the changed-to home agent being associated to a same home network of the mobile node because this would have allowed the original active Home Agent to relinquish its active status and revert to the new Home Agent, column 17, lines 58-60.

**Regarding Claim 16**, Gwon discloses an access router (Fig. 2, routers, R1, R2) comprising:

a home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21) for storing home agent information including an address of a home agent (home agents/local agents 145 store IP addresses of intermediary nodes used for further communications between the mobile node 135 and the corresponding node 140, paragraph [0080], page 9, lines 19-25); and

a home agent information notifying section (Fig. 4, home agent 145 notifies the correspondent node 140 to update its binding information for the mobile node, paragraph [0079], page 8, lines 6-8) for notifying a mobile node (Fig. 4, mobile node 135), as a slave, of home agent information about another neighboring home agent (Fig. 4, Home Agent (HA) 145) stored in the home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21), the home agent and the neighboring home agent being associated to a same home network of the mobile node, wherein if the mobile node changes to the neighboring home agent, the neighboring home agent registers a care-of address that the mobile node is utilizing for communication (new "care-of" IP address is registered with the home area (HA) by the mobile node 135, paragraph [0050], page 5, lines 10-12), and after the change the neighboring home agent forwards messages directed to a home address of the mobile node to the care-of address (packets (messages) transmitted to the home IP address of the mobile node 135 will be tunneled by the home area (HA) to the mobile node 135 at its new "care-of" IP address, paragraph [0050], page 6, lines 20-23).

Gwon fails to disclose changes to the neighboring home agent.

But, Warrier et al. discloses in Fig. 2, home agent control mode performs home agent functions with plurality of home agents 18, 18A and 18B whereby home agent 18 (neighboring home agent) performs tunneling for the mobile node and forwards packets of data from the WAP server of home agent, home radius 38 assigned to home network 14 to the foreign agent 16 for transmission to the mobile node 10, columns 5 and 6, lines 58-67 and lines 1-3 respectively.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Warriar et al.'s neighboring home agent because this would have allowed the home agent 18 (neighboring home agent) to forward packets of data to the mobile node 10, columns 5 and 6, lines 66-67 and lines 1-3 respectively

The combination of Gwon and Warriar et al. fails to disclose the home agent and the neighboring home agent being associated to a same home network of the mobile node.

But, Leung discloses in Fig. 2A, the home agent (HA1) and the neighboring home agent (HA2, HA3) being associated to a same home network (home network 12) of the mobile node (Mobile Nodes 6, 27).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Leung's home agent and the neighboring home agent being associated to a same home network of the mobile node because this would have allowed the original active Home Agent to relinquish its active status and revert to the new Home Agent, column 17, lines 58-60.

**Regarding Claim 17**, Gwon discloses an access router according to claim 16, wherein the home agent information notifying section (Fig. 4, home agent 145 notifies the correspondent node 140 to update its binding information for the mobile node, paragraph [0079], page 8, lines 6-8) notifies the mobile node of home agent information (Fig. 4, home agent 145 information for the mobile node, paragraph [0079], page 8, lines 6-8) when requested from the mobile node (Fig. 4, mobile node 135).

**Regarding Claim 18**, Gwon discloses an access router according to claim 16, wherein the home agent information notifying section (Fig. 4, home agent 145 notifies the correspondent node 140 to update its binding information for the mobile node, paragraph [0079], page 8, lines 6-8) periodically notifies the mobile node of home agent information (home agent 145 updates the mobile node's IP address to the home IP address, paragraph [0079], page 8, lines 3-5).

**Regarding Claim 19**, Gwon discloses a home agent information storing server (servers of various types, paragraph [0006], page 1, line 8) comprising:

a home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21) for holding home agent information including an address of a home agent (Fig. 4, Home Agent (HA) 145) which the home agent information storing server manages (Fig. 2, server);

a home agent information notifying section (Fig. 4, home agent 145 notifies the correspondent node 140 to update its binding information for the mobile node, paragraph [0079], page 8, lines 6-8) for notifying any one of a mobile node (Fig. 4, mobile node 135), access router (Fig. 2, routers, R1, R2) and home agent (Fig. 4, Home Agent (HA) 145) in connection to a network (Fig. 4, data network 100) of the home agent information (Fig. 4, home agent 145 information for the mobile node, paragraph [0079], page 8, lines 6-8) selected from the home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21),

wherein when the home agent information storing server receives a notification for changing the home agent from the mobile node, the home agent information storing server notifies the home agent of a changed-to home agent, the home agent and the changed-to home agent being associated to a same home network of the mobile node, and

wherein the changed-to home agent registers a care-of address that the mobile node is utilizing for communication (new "care of" IP address is registered with the home area (HA) by the mobile node 135, paragraph [0050], page 5, lines 10-12), and after the change the changed-to home agent forwards messages directed to a home address of the mobile node to the care-of address (packets (messages) transmitted to the home IP address of the mobile node 135 will be tunneled by the home area (HA) to the mobile node 135 at its new "care-of" IP address, paragraph [0050], page 6, lines 20-23).

Gwon fails to disclose the server notifies the home agent of the change-to home agent.

But, Warriar et al. discloses in Fig. 2, home agent control mode performs home agent functions with plurality of home agents 18, 18A and 18B whereby home agent 18 (change-to home agent) performs tunneling for the mobile node and forwards packets of data from (notified by) the WAP server of home agent, home radius 38 assigned to home network 14 to the foreign agent 16 for transmission to the mobile node 10, columns 5 and 6, lines 58-67 and lines 1-3 respectively.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Warriar et al.'s server notifies the home agent of the change-to home agent because this would have allowed the home agent 18 (change-to home agent) to

forward packets of data to the mobile node 10, columns 5 and 6, lines 66-67 and lines 1-3 respectively

The combination of Gwon and Warriar et al. fails to disclose the home agent and the changed-to home agent being associated to a same home network of the mobile node.

But, Leung discloses in Fig. 2A, the home agent (HA1) and the changed-to home agent (HA2, HA3) being associated to a same home network (home network 12) of the mobile node (Mobile Nodes 6, 27).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Leung's home agent and the changed-to home agent being associated to a same home network of the mobile node because this would have allowed the original active Home Agent to relinquish its active status and revert to the new Home Agent, column 17, lines 58-60.

**Regarding Claim 20**, Gwon discloses a home agent information storing server according to claim 19, wherein the home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21) further holds any one piece of information of current unoccupied resource (current Internet addressing and routing protocols and schemes to accommodate network access and data communication by wireless mobile node, paragraph [0018], page 2, lines 2-4) and load (data communication loads, paragraph [0009], page 1, lines 14-17) of the managing home agent (Fig. 4, Home Agent (HA) 145).

**Regarding Claim 21**, Gwon discloses a home agent information storing server according to claim 20, further comprising a home agent information acquiring section (Fig. 1, gateway router (GR) 130, maintains current location information for the mobile node, paragraph [0039], page 4, lines 3-5) for receiving the information from the managing home agent (Fig. 4, Home Agent (HA) 145) and updating the home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21).

**Regarding Claim 22**, Gwon discloses a home agent according to claim 10, further comprising a home agent information acquiring section (Fig. 1, gateway router (GR) 130, maintains current location information for the mobile node, paragraph [0039], page 4, lines 3-5) for acquiring the home agent information (Fig. 4, home agent 145 information for the mobile node, paragraph [0079], page 8, lines 6-8) from the home agent information storing server (servers of various types, paragraph [0006], page 1, line 8) comprising:

a home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21) for holding home agent information including an address of a managing home agent (Fig. 4, Home Agent (HA) 145);  
and

a home agent information notifying section (Fig. 4, home agent 145 notifies the correspondent node 140 to update its binding information for the mobile node, paragraph [0079], page 8, lines 6-8) for notifying any one of a mobile node (Fig. 4, mobile node 135), access router (Fig. 2, routers, R1, R2) and home agent (Fig. 4, Home Agent (HA) 145) in connection to a



network (Fig. 4, data network 100) of the home agent information (Fig. 4, home agent 145 information for the mobile node, paragraph [0079], page 8, lines 6-8) selected from the home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21);

wherein the home agent information storing section further holds any one piece of information of current unoccupied resource (current Internet addressing and routing protocols and schemes to accommodate network access and data communication by wireless mobile node, paragraph [0018], page 2, lines 2-4) and load (data communication loads, paragraph [0009], page 1, lines 14-17) of the managing home agent (Fig. 4, Home Agent (HA) 145).

**Regarding Claim 23**, Gwon discloses a home agent according to claim 22, characterized to send information of own load (data communication loads, paragraph [0009], page 1, lines 14-17) and unoccupied resource (current Internet addressing and routing protocols and schemes to accommodate network access and data communication by wireless mobile node, paragraph [0018], page 2, lines 2-4) to the home agent information storing server (servers of various types, paragraph [0006], page 1, line 8):

a home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21) for holding home agent information including an address of a managing home agent (Fig. 4, Home Agent (HA) 145);  
and

a home agent information notifying section (Fig. 4, home agent 145 notifies the correspondent node 140 to update its binding information for the mobile node, paragraph [0079],

page 8, lines 6-8) for notifying any one of a mobile node (Fig. 4, mobile node 135), access router (Fig. 2, routers, R1, R2) and home agent (Fig. 4, Home Agent (HA) 145) in connection to a network (Fig. 4, data network 100) of the home agent information (Fig. 4, home agent 145 information for the mobile node, paragraph [0079], page 8, lines 6-8) selected from the home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21);

wherein the home agent information storing section further holds any one piece of information of current unoccupied resource (current Internet addressing and routing protocols and schemes to accommodate network access and data communication by wireless mobile node, paragraph [0018], page 2, lines 2-4) and load (data communication loads, paragraph [0009], page 1, lines 14-17) of the managing home agent (Fig. 4, Home Agent (HA) 145).

**Regarding Claim 24**, Gwon discloses an access router (Fig. 2, routers, R1, R2) according to claim 16, further comprising a home agent information acquiring section (Fig. 1, gateway router (GR) 130, maintains current location information for the mobile node, paragraph [0039], page 4, lines 3-5) for getting the home agent information (Fig. 4, home agent 145 information for the mobile node, paragraph [0079], page 8, lines 6-8) from the home agent information storing server (servers of various types, paragraph [0006], page 1, line 8):

a home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21) for holding home agent information including an address of a managing home agent (Fig. 4, Home Agent (HA) 145);  
and

a home agent information notifying section (Fig. 4, home agent 145 notifies the correspondent node 140 to update its binding information for the mobile node, paragraph [0079], page 8, lines 6-8) for notifying any one of a mobile node (Fig. 4, mobile node 135), access router (Fig. 2, routers, R1, R2) and home agent (Fig. 4, Home Agent (HA) 145) in connection to a network (Fig. 4, data network 100) of the home agent information (Fig. 4, home agent 145 information for the mobile node, paragraph [0079], page 8, lines 6-8) selected from the home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21);

wherein the home agent information storing section further holds any one piece of information of current unoccupied resource (current Internet addressing and routing protocols and schemes to accommodate network access and data communication by wireless mobile node, paragraph [0018], page 2, lines 2-4) and load (data communication loads, paragraph [0009], page 1, lines 14-17) of the managing home agent (Fig. 4, Home Agent (HA) 145).

**Regarding Claim 25**, Gwon discloses a mobile node (Fig. 1, mobile node 135) according to claim 1, wherein the home agent information acquiring section (Fig. 1, gateway router (GR) 130, maintains current location information for the mobile node, paragraph [0039], page 4, lines 3-5) gets the home agent information (Fig. 4, home agent 145 information for the mobile node, paragraph [0079], page 8, lines 6-8) from the home agent information storing server (servers of various types, paragraph [0006], page 1, line 8):

a home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21) for holding home agent

information including an address of a managing home agent (Fig. 4, Home Agent (HA) 145);  
and

a home agent information notifying section (Fig. 4, home agent 145 notifies the correspondent node 140 to update its binding information for the mobile node, paragraph [0079], page 8, lines 6-8) for notifying any one of a mobile node (Fig. 4, mobile node 135), access router (Fig. 2, routers, R1, R2) and home agent (Fig. 4, Home Agent (HA) 145) in connection to a network (Fig. 4, data network 100) of the home agent information (Fig. 4, home agent 145 information for the mobile node, paragraph [0079], page 8, lines 6-8) selected from the home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21);

wherein the home agent information storing section further holds any one piece of information of current unoccupied resource (current Internet addressing and routing protocols and schemes to accommodate network access and data communication by wireless mobile node, paragraph [0018], page 2, lines 2-4) and load (data communication loads, paragraph [0009], page 1, lines 14-17) of the managing home agent (Fig. 1, Home Agent (HA) 145, paragraph [0038], page 4, line 9).

**Regarding Claim 26**, Gwon discloses a mobile node (Fig. 1, mobile node 135) according to claim 1, wherein the home agent information acquiring section (Fig. 1, gateway router (GR) 130, maintains current location information for the mobile node, paragraph [0039], page 4, lines 3-5) gets information about a home agent (Fig. 1, mobile node 135) notified from the home agent comprising:

a home agent information notifying section (Fig. 4, home agent 145 notifies the correspondent node 140 to update its binding information for the mobile node, paragraph [0079], page 8, lines 6-8) for answering a registration refusal (home agent does not grant the registration request, paragraph [0077], page 8, lines 10-11) in a case that, when receiving a registration request (home agent/foreign agent 145 communicates the registration request, paragraph [0077], page 8, lines 3-4) from a mobile node (Fig. 1, mobile node 135), the home agent is deficient in unoccupied resource (deficiencies of the current Internet addressing and routing protocols and schemes to accommodate network access and data communication by wireless mobile node, paragraph [0018], page 2, lines 2-4); and

a home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21) for storing home agent information including an address and current resource information of another home agent (home agents/local agents 145 store IP addresses of intermediary nodes used for further communications between the mobile node 135 and the corresponding node 140, paragraph [0080], page 9, lines 19-25),

wherein the home agent information notifying section answers the registration refusal and selects a home agent (Fig. 1, Home Agent (HA) 145, paragraph [0038], page 4, line 9) suited for a predetermined condition (IP address of direct route resulting from the exchange of greeting packets in its route history cache, paragraph [0080], page 9, lines 20-23) from the home agent information storing section (home agents/local agents 145 store IP addresses of intermediary nodes, paragraph [0080], page 9, lines 19-21) to thereby answer home agent information of the selected home agent (Fig. 1, Home Agent (HA) 145, paragraph [0038], page 4, line 9).

**Regarding Claim 27**, Gwon discloses a mobile node (Fig. 1, mobile node 135) according to claim 26, wherein the home agent selecting section selects (Fig. 5, L3MP mobility prediction, 710), preferentially, a home agent (Fig. 1, mobile node 145) satisfying at least any of conditions of greatest unoccupied resource (current Internet addressing and routing protocols and schemes to accommodate network access and data communication by wireless mobile node, paragraph [0018], page 2, lines 2-4), minimum load (data communication loads, paragraph [0009], page 1, lines 14-17), least hop number (Fig. 4, 720) and shortest communication delay time (access delay due to variable wireless link conditions, paragraph [0055], page 6, line 9).

**Regarding Claim 28**, Gwon discloses a method (methodology recommended for mobile IP version 6 mobile nodes, paragraph [0048], page 5, lines 2-5) for mobile communications between the mobile node 135 and the corresponding node 140, paragraph [0080], page 9, lines 23-25) comprising:

a step of measuring (Mobile IP version 6 route optimization, paragraph [0055], page 6, lines 2-3) at least any one of a hop number (Fig. 4, 720) and communication delay time (codec, packet formation, propagation and unknown access delays due to high variable wireless link conditions, paragraph [0055], page 6, lines 6-9) to a belonging home agent (Fig. 1, mobile node 145) by a mobile node (Fig. 1, mobile node 135);

a step of requesting (Fig. 5, L3MP mobility prediction, 710) a belonging home agent (Fig. 1, mobile node 145) to delete registration and a new home agent to make registration, when a result of measurement (value selected to indicate when a hand-off is prior to the actual hand-

off, paragraph [0060], page 7, lines 2-7) becomes equal to or greater than a predetermined value (threshold value, paragraph [0060], page 7, line 2);

a step of deleting a registration (Fig. 5, L3MP mobility prediction, 710) of the mobile node by the belonging home agent (Fig. 1, Home Agent (HA) 145, paragraph [0038], page 4, line 9); and

a step of registering (Fig. 5, pre-register 720) the mobile node by the new home agent (plurality of agents 145, paragraph [0038], page 4, line 6), the belonging home agent and the new home agent being associated to a same home network of the mobile node,

wherein the new home agent registers a care-of address that the mobile node is utilizing for communication (new “care of” IP address is registered with the home area (HA) by the mobile node 135, paragraph [0050], page 5, lines 10-12), and after the registering step the new home agent forwards messages directed to a home address of the mobile node to the care-of address (packets (messages) transmitted to the home IP address of the mobile node 135 will be tunneled by the home area (HA) to the mobile node 135 at its new “care-of” IP address, paragraph [0050], page 6, lines 20-23).

Gwon fails to disclose a new home agent.

But, Warriar et al. discloses in Fig. 2, home agent control mode performs home agent functions with plurality of home agents 18, 18A and 18B whereby home agent 18 (new home agent) performs tunneling for the mobile node and forwards packets of data from the WAP server of home agent, home radius 38 assigned to home network 14 to the foreign agent 16 for transmission to the mobile node 10, columns 5 and 6, lines 58-67 and lines 1-3 respectively.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Warriar et al.'s new home agent because this would have allowed the home agent 18 (new home agent) to forward packets of data to the mobile node 10, columns 5 and 6, lines 66-67 and lines 1-3 respectively.

The combination of Gwon and Warriar et al. fails to disclose the belonging home agent and the new home agent being associated to a same home network of the mobile node.

But, Leung discloses in Fig. 2A, the belonging home agent (HA1) and the new home agent (HA2, HA3) being associated to a same home network (home network 12) of the mobile node (Mobile Nodes 6, 27).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Leung's belonging home agent and the new home agent being associated to a same home network of the mobile node because this would have allowed the original active Home Agent to relinquish its active status and revert to the new Home Agent, column 17, lines 58-60.

**Regarding Claim 29**, Gwon discloses a method for mobile communications according to claim 28, wherein as the new home agent is selected preferentially a home agent (Fig. 1, home agent 145) satisfying at least any of conditions of greatest unoccupied resource (current Internet addressing and routing protocols and schemes to accommodate network access and data communication by wireless mobile node, paragraph [0018], page 2, lines 2-4), minimum load (data communication loads, paragraph [0009], page 1, lines 14-17), least hop number (Fig. 4,



720) and shortest communication delay time (access delay due to variable wireless link conditions, paragraph [0055], page 6, line 9), minimum load (data communication loads, paragraph [0009], page 1, lines 14-17), least hop number (Fig. 4, 720) and shortest communication delay time (access delay due to variable wireless link conditions, paragraph [0055], page 6, line 9).

**Regarding Claim 30**, Gwon discloses a method for mobile communications according to claim 29, wherein the new home agent is notified from a home agent information managing server (servers of various types, paragraph [0006], page 1, line 8) for managing information about home agents (Fig. 1, home agent 145) to the mobile node (Fig. 1, mobile node 135).

#### ***Response to Arguments***

4. Applicant's arguments filed September 9, 2009 have been considered. But, in view of the new grounds of rejection resulting from the amended claims, the arguments are moot.

#### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Andrews whose telephone number is (571) 270-1801. The examiner can normally be reached on Monday through Friday 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rao S. Seema can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin C. Harper/

Primary Examiner, Art Unit 2416

LA/la  
September 18, 2009